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pathways may exist which are never normally traversed.

Only one explanation of the restoration of function is offered in the article under consideration, *i. e.*, that the subcortical arcs are the more primitive and are sufficiently retained in adult pigeons after decerebration to make possible the carrying out of normal drinking reactions.

Another explanation is also possible. Many writers have claimed that certain habits, arising in the first instance through activities involving the cortex, later are passed on completely to subcortical centers. As Herrick<sup>3</sup> points out, these acquired automatisms may so closely resemble inherited reflexes as to be indistinguishable in the absence of the history of their development. If it is here assumed that the drinking reaction established during the life of the pigeon is transferred in large part to subcortical structures, its retention after decerebration would seem to be expected, while in the case of the chick, decerebrated before such reactions were built up, no such appearance could be looked for. It might also be argued that the feeding reaction, being more complicated, was not so completely transferred from the cortical region as to be effective after decerebration.

That such an assumption may be justified is indicated by the work of Franz and Lashley<sup>4</sup>, who found from numerous careful experiments with white rats that extensive cortical lesions did not usually affect the retention of most habits due to previous training, nor did they prevent the formation of new habits. The authors also report that in the cat and monkey where the frontal portion of the cortex is normally utilized in the formation of certain habits, these habits, if long practiced, are still carried out in the ordinary way after the ablation of the frontal cortex. This work as well as its continuation by Lashley<sup>5</sup> clearly shows that the classical picture of the decerebrate animal is in large measure erroneous and must be carefully revised and with it the entire conception of the physiology of the central nerv-

ous system. Any contribution to this promising and important field is to be welcomed.

FRANK W. WEYMOUTH

STANFORD UNIVERSITY,  
CALIFORNIA

#### THE BITE OF LACTRODECTUS MACTANS

IN SCIENCE for January 13, F. R. Welsh writes on "Poisonous Spiders." In regard to the "Black Widow," *Lactrodectus mactans*, he quotes Dr. McCook as of the opinion that the bite of this spider is "in most instances of small consequence." During the past two years the writer has had called to his attention four cases of attacks by this spider on human beings. These were all reported by practising physicians who sent in the spiders for identification. All four cases were those of men who were bitten on the penis while using outside closets. In every case the results were of a very serious nature. The patients suffered intense pain accompanied by severe abdominal disturbances, convulsions and delirium. In one case the abdominal pain was so intense and pronounced that the patient who had been sent to a hospital in a distant city was, upon arrival, promptly operated upon for appendicitis. The severe symptoms lasted from twenty-four hours in one man to over a week in the case of another. In a third case the physician reported four days after the patient had been bitten that he was "not yet out of danger." However all ultimately recovered. Two of these men were bitten the same day in the same closet and presumably by the same spider, indicating that the spider does not exhaust her venom by one bite.

These experiences would indicate that the bite of this species, at least when administered in a tender part of the body, is very serious, exceedingly painful, and even dangerous.

J. R. WATSON

UNIVERSITY OF FLORIDA

#### WATER-IMMERSION OBJECTIVES

I WISH to call the attention of those biologists who use the microscope to the value of the much neglected water-immersion objective. Its inferiority to the oil-immersion in the matter of numerical aperture, and consequently in power of resolution, has led many microscop-

<sup>3</sup> *Introduction to Neurology*, 2d ed., p. 336.

<sup>4</sup> *Psychobiology*, Vol. 1, p. 71, 1917.

<sup>5</sup> *Psychobiology*, Vol. 2, p. 55, 1920.